1879.

SUPREME COURT OF THE UNITED STATES.

No. 110.

ROSS WINANS, PLAINTIFF IN ERROR,

vs.

ADAM, EDWARD, AND TALBOTT DENMEAD.

IN ERROR TO THE CIRCUIT COURT, U. S., FOR THE DISTRICT OF MARYLAND.

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THE UNITED STATES OF AMERICA,
District of Maryland, to wit:

At a circuit court of the United States, for the fourth circuit, in and for the Maryland district, begun and held at the city of Baltimore on the first Monday in April, in the year of our Lord one thousand eight hundred and fifty-two. Present, the honorable John Glenn, judge of Maryland district; Z. Collins Lee, esq., attorney; Thomas H. Kent, (of Jo.) esq., marshal; Thomas Spicer, clerk.

Among other were the following proceedings to wit:

ROSS WINANS
vs.
ADAM DENMEAD, Edward Denmead, Talbott Denmead.

Be it remembered, that heretofore, to wit, on the first day of April, in the year of our Lord one thousand eight hundred and fifty-one, the said Ross Winans, by John H. B. Latrobe, his attorney, with the consent of the said Adam Denmead, Edward Denmead, and Talbott Denmead, by James M. Campbell, their attorney, declared in the circuit court here against the said Adam Denmead, Edward Denmead, and Talbott Denmead, in a plea of trespass on the case, in the words and of the tenor following, to wit:

Declaration.

In the circuit court of the United States, for the fourth circuit, in and for the district of Maryland.

Adam Denmead, Edward Denmead, and Talbott Denmead, partners under the firm of Adam Denmead & Sons, late of the district of Maryland, were attached to answer to Ross Winans, of Baltimore, in the county of Baltimore, in the district of Maryland, manufacturers, in a plea of trespass on the case. For that the plaintiff was the original and first inventor of a certain new and useful improvement in cars for the transportation of coal, &c., in the letters patent hereinafter mentioned and fully described, the same being a new and useful "improvement in cars for transportation of coal, &c.," which was not known or used before his said invention, and which was not, at the time of his application for a patent as hereinafter mentioned, in public use or on sale, with his consent or allowance; and the plaintiff being so as aforesaid the inventor thereof, and being also a citizen of the United States, on the twenty-sixth day of June, in the year eighteen hundred and forty-seven, upon due application therefor, did obtain certain letters

patent therefor, in due form of law, under the seal of the Patent office of the United States, signed by the Secretary of State, and countersigned by the acting Commissioner of Patents of the United States, bearing date, the day and year aforesaid whereby there was secured to him, his heirs, administrators, executors, or assigns, for the term of fourteen years, from and after the date of the patent, the full and exclusive right and liberty of making, using, and vending to others to be used, the said invention as by the said letters patent, in court to be produced, will fully appear.

And the plaintiff further says, that from the time of the granting to him of the said letters patent hitherto, the said exclusive right has been, and now is, of great value to him, to wit, of the value of twenty thousand dollars.

Yet the said defendants, well knowing the premises, but contriving to injure the plaintiff, did, on the first day of January, in the year eighteen hundred and fifty, and at divers times before and afterwards, during the said term of fourteen years mentioned in said letters patent, and before the purchase of this writ, at Baltimore, in the county of Baltimore, in said district of Maryland, unlawfully and wrongfully, and without the consent or allowance, and against the will, of the plaintiff, make, use, and vend to others to be used, the said improvement, in violation and infringement of the exclusive right so secured to the plaintiff by said letters patent as aforesaid, and contrary to the form of the statute of the United States in such case made and provided; whereby the plaintiff has been greatly injured, and deprived of great profits and advantages which he might, and otherwise would, have derived from said invention, and has sustained actual damage to the amount of two thousand dollars; and by force of the statute aforesaid an action has accrued to him to recover the said actual damage, and such additional amount, not exceeding in the whole three times the amount of such actual damages, as the court may see fit to order and adjudge; yet the said defendants have never paid the same, or any part thereof, to the plaintiff, but have refused, and yet refuse, so to do.

JNO. H. B. LATROBE,
Plaintiff's attorney.

Which said declaration is thus endorsed, to wit:

MR. SPICER: File this nar, and docket suit, by consent, to November term, 1850, of the circuit court for this district.

JNO. H. B. LATROBE,
Plaintiff's attorney.
J. M. CAMPBELL,
Defend'ts' attorney.

And thereupon, at April term of the said circuit court, to wit, on the first Monday in April, in the year of our Lord one thousand eight hundred and fifty-one, comes into the circuit court here the parties aforesaid, by their attorneys aforesaid. And thereupon the said Ross

Winans, by his attorney aforesaid, prays the court here that the said Adam Denmead, Edward Denmead, and Talbott Denmead, may answer to the declaration aforesaid of him, the said Ross Winans, in the plea aforesaid.

Rule plea.

Whereupon it is ruled by the court here that the said Adam Denmead, Edward Denmead, and Talbott Denmead, answer to the declaration of the said Ross Winans in the plea aforesaid; and if the said Adam Denmead, Edward Denmead, and Talbott Denmead, do not answer to the declaration of the said Ross Winans, in the plea aforesaid, judgment will be rendered against them by default.

Plea.

And thereupon the said Adam Denmead, Edward Denmead, and Talbott Denmead, by their attorney aforesaid, defend the force and injury, when, &c., and say that they are not guilty of the said supposed grievances above laid to their charge, or any or either of them, in manner and form as the said Ross Winans hath above complained against them; and of this they put themselves upon the country, &c.

And the said Ross Winans in like manner, &c.

Issue.

Thereupon further process of and upon the premises aforesaid, between the parties aforesaid, by order of the court here thereon, is continued until the first Monday in November next.

At which said first Monday in November, in the year of our Lord one thousand eight hundred and fifty-one, comes again into the circuit court here the parties aforesaid, by their attorney aforesaid. And thereupon the said Ross Winans, by his attorney aforesaid, declared anew against the said Adam Denmead, Edward Denmead, and Talbott Denmead, in the plea aforesaid, in manner and form, and of the tenor following, to wit:

Amended nar.

In the circuit court of the United States, for the district of Maryland, to wit:

Adam Denmead, Edward Denmead, and Talbott Denmead, partners, under the firm of Adam Denmead & Sons, were attached to answer unto Ross Winans, of the city of Baltimore, in the State of Maryland, in a plea of trespass on the case; for that the plaintiff, the said Ross Winans, was the original and first inventor of a certain new and useful improvement in cars, for the transportation of coal, &c., in the letters patent, hereinafter mentioned, fully described; the same being a new and useful improvement in cars, for the transportation of coal, &c., which was not known or used before his said invention, and which was not, at the time of his application for a patent, as hereinafter mentioned, in public use or on sale with his consent or allowance;

and the plaintiff being so as aforesaid the inventor thereof, and being also a citizen of the United States, on the 26th day of June, in the year 1847, upon due application therefor, did obtain certain letters patent therefor, in due form of law, under the seal of the Patent office for the United States, signed by the Secretary of State, and countersigned by the Commissioner of Patents of the United States, bearing date the day and year aforesaid, whereby there was secured to him, his heirs, executors, administrators, and assigns, for the term of fourteen years, from and after the date of the patent, the full and exclusive right and liberty of making, using, and vending to others to be used, the said invention, as by the said letters patent, in court to be produced, will fully appear. And the said plaintiff further says that, from the time of the granting to him the said letters patent as aforesaid hitherto, he has made, and vended to others to be used, the said invention, to his great advantage and profit; yet the said defendants, well knowing the premises, but contriving to injure the plaintiff, did, on the first day of January, 1849, and at divers other times before and afterwards, during the said term of fourteen years, mentioned in the said letters patent, and before the purchase of this writ, at Baltimore, in the district aforesaid, unlawfully and wrongfully, and without the consent or allowance of the said plaintiff, and against his will, make, and vend to others to be used, the said invention, in violation and infringement of the exclusive right so secured to the plaintiff by the latters patent aforesaid, and contrary to the form of the statute of the United States in such case made and provided; whereby the plaintiff has been greatly injured, and deprived of great profits and advantages which he might, and otherwise would, have derived from said invention, and has sustained actual damage to the amount of two thousand dollars; and by force of the statute aforesaid an action hath accrued to him to recover the said actual damage, and such additional amount, not exceeding in the whole three times the amount of such actual damage, as the court may see fit to order and adjudge; yet the said defendants, though requested, have never paid the same, or any part thereof, to the plaintiff, but have refused, and do still refuse, so to do, to the damage of the said plaintiff six thousand dollars; wherefore he brings suit.

JNO. H. B. LATROBE,
Plaintiff's attorney.

Endorsed.—Service of copy admitted, October 9th, 1851.
J. M. CAMPBELL,
Defendant's attorney.

Thereupon further process of and upon the premises aforesaid, between the parties aforesaid, by order of the court here thereon, is further continued until the first Monday in April next. At which said first Monday in April, in the year of our Lord one thousand eight hundred and fifty-two, comes into the circuit court here the parties aforesaid, by their attorneys aforesaid.

Whereupon, for trying the issue aforesaid, it is ordered by the court here, that twenty persons from the panel of petit jurors returned to the court here by the marshal of the Maryland district aforesaid, be drawn by ballot. And thereupon the twenty persons being so drawn by ballot, and written up[on] two lists, one of which said lists is delivered to the counsel for the respective parties; and the counsel for each of the said parties having stricken out four persons from the said lists, thereupon the remaing twelve persons being called come, to wit:

Jury.

George W. Cox, William H. Smith, James W. Collins, John R. Magruder, Alfred Warfield, George C. Davis, Isaac Owens, (of Jas.,) William B. Hammond, James Lucas, Archibald Hart, George W. Duvall, Charles Jessop; who being empannelled and sworn to say the truth in the premises, upon their oath do say:

Verdict.

That the said Adam Denmead, Edward Denmead, and Talbot Denmead, are not guilty of the trespass in the declaration within specified, as the said Ross Winans hath within by pleading alleged.

Judgment.

Therefore, it is considered by the court here, that the said Ross Winans take nothing by his writ and declaration aforesaid, but that he be in mercy, &c., for his false clamor; and that the said Adam Denmead, Edward Denmead, and Talbot Denmead, go thereof without day, &c. And it is also considered by the court here, that the said Adam Denmead, Edward Denmead, and Talbot Denmead, recover against the said Ross Winans the sum of , by the court here, unto them, the said Adam Denmead, Edward Denmead, and Talbott Denmead, on their assent, adjudged for their costs and charges by them about their defence in this behalf laid out and expended, and that they have thereof their execution against the said Ross Winans, &c.

Before the jurors aforesaid withdrew from the bar of the court here, the said Ross Winans, by his attorney aforesaid, tendered to the court here the following bill of exceptions, which was by the court here signed and sealed, and which is in form following, to wit:

Plaintiff's bill of exceptions.

Plaintiff's exception.

ROSS WINANS
vs.
ADAM DENMEAD, EDWARD Denmead, and Talbott Denmead.

The plaintiff, to support the issue on his part in the cause, offered in evidence the patent granted to him on the twenty-sixth day of June in the year 1847, with the specifications thereto annexed, as follows:

Patent No. 5175.

The United States of America, to all to whom these letters patent shall come:

Whereas, Ross Winans, Baltimore, Maryland, has alleged, that he has invented a new and useful improvement in cars for transportation of coal, &c., which he states has not been known or used before his application; has made oath that he is a citizen of the United States; that he does verily believe that he is the original and first inventor or discoverer of the said improvement, and that the same hath not, to the best of his knowledge and belief, been previously known or used; has paid into the treasury of the United States the sum of thirty dollars, and presented a petition to the Commissioner of Patents, signifying a desire of obtaining an exclusive property in the said improvement, and praying that a patent may be granted for that purpose. These are, therefore, to grant according to law, to the said Ross Winans, his heirs, administrators, or assigns, for the term of fourteen years from the twenty-sixth day of June, one thousand eight hundred and forty-seven, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said improvement, a description whereof is given in the words of the said Ross Winans, in the schedule hereunto annexed, and is made part of these presents.

In testimony whereof, I have caused these letters to be made patent, and the seal of the Patent office has been hereunto affixed. [L.S.] Given under my hand at the city of Washington this twenty-sixth day of June, in the year of our Lord one thousand eight hundred and forty-seven, and of the independence of the United States of America the seventy-first.

JAMES BUCHANAN,
Secretary of State.
HENRY H. SYLVESTER,
Acting Commissioner of Patents.

Countersigned and sealed with the seal of the Patent office.

Schedule 5,175.—*The schedule referred to in these letters patent, and making part of the same*

To all to whom these present shall come:

Be it known that I, Ross Winans, of the city and county of Baltimore, and State of Maryland, have invented new and useful improvements in railroad cars, and that the following is a full, clear, and exact description of the principle or character which distinguishes it from all other things before known, and of the manner of making, constructing, and using the same, reference being had to the accompanying drawings making part of this specification, in which figure 1 is a plan of a car on my improved plan; figure 2 a side elevation thereof; figure 3 an end elevation of the same; and figure 4 a section of the body removed from the truck. The same letters indicate like parts in all the figures.

The transportation of coal, and all other heavy articles in lumps, has been attended with great injury to the cars, requiring the bodies to be constructed with great strength to resist the outward pressure on the sides, as well as the vertical pressure on the bottom, due not only to the weight of the mass, but the mobility of the lumps among each other, tending to "pack," as it is technically termed. Experience has shown that cars, on the old mode of construction, cannot be made to carry a load greater than its own weight; but by my improvement I am enabled to make cars of greater durability than those heretofore made, which will transport double their own weight of coal, &c.

The principle of my invention, by which I am enabled to attain this important end, consists in making the body, or a portion thereof, conical, by which the area of the bottom is reduced, and the load exerts an equal strain on all parts, and which does not tend to change the form, but to exert an equal strain in the direction of the circle. At the same time this form presents the important advantage, by the reduced size of the lower part thereof, to extend down within the truck and between the axles, thereby lowering the centre of gravity of the load.

In the accompanying drawings, 2 represents the body of the car made of sheet iron, in the form of a frustrum of a hollow cone, with the upper part (D) cylindrical. To the lower edge of this is secured a flanch, (c,) which forms part of the bottom, and against which the moveable bottom (d) closes, as will be described hereafter. The body of the car is connected with the truck by means of two cross bars (e e) that pass horizontally through the conical part of it, with their ends resting on bar springs (f f) on the top of the side pieces (g g) of the truck, these being provided with boxes (h h) of any desired construction, on which run the journals of the wheel axles, (i i,) the lower end of the conical part of the body passing down between the side pieces and the axles of the truck. The springs (f f) are plates of steel secured at the ends and middle to the upper surface of the side pieces of the truck, and the bars (e e) that pass through the body of the car, are secured to the springs at points midway between their attachment to the side pieces of the truck, the upper surface of these being cut out as at (kk) to give the requisite play to the springs. The draught bar (l) which forms the connexion between the different cars of a train, passes through the conical part of the body above the bars, (e e,) and is firmly secured to them, so as to relieve the body of the strain due to the draught. To this bar is also secured the moveable bottom of the car, which is provided with a chain, (m,) to the end of which is secured a latch piece (n) that passes through a staple (o) attached to the draught bar, and is there secured by a bolt (p) that slides on the bar, the head or handle of the bolt being extended outside of the body, as at (q,) so that when the car is to — emptied of its contents the bolt (p) is drawn, which liberates the latch bolt and permits the moveable bottom to fall by the weight of the coal, &c., resting on it.

When desired the principle of my invention can be modified to make the car double, as represented in the plan, figure 6, and elevation,

figure 5, plate 2. In this modification the circles of the two bodies intersect each other, and the union is formed between the two by the chord plate, (S.) In this construction there is space enough left between the two cones at the lower end for the middle pair of wheels, such cars being made with six wheels instead of the four used in the first example.

It will be obvious that car bodies constructed on the principle of my invention may be connected with, and supported on, the truck without the bars passing through the body, by having the supports bolted or otherwise secured to the outside, or to hoops embracing the whole circumference; but, by these modifications, a greater strain will be given to the body than by the arrangement above described.

What I claim as my invention, and desire to seecure by letters patent patent, is making the body of a car for the transportation of coal, &c., in the form of a frustrum of a cone, substantially as herein described, whereby the force exerted by the weight of the load presses equally in all directions, and does not tend to change the form thereof, so that every part resists its equal proportion, and by which, also, the lower part is so reduced as to pass down within the truck frame and between the axles, to lower the centre of gravity of the load without diminishing the capacity of the car as described.

I also claim extending the body of the car below the connecting pieces of the truck frame, and the line of draught, by passing the connecting bars of the truck frame, and the draught bar, through the body of the car, substantially as described.

ROSS WINANS.

Witnesses—
GEORGE W. WHISTLER, JR.,
JOHN B. EASTER. (Examined.)

Evidence of Samuel Doubleday.

And he further, by Samuel Doubleday, a competent, [witness] proved that while the plaintiff was constructing a car according to the specification of the foregoing patent, in his shops at the Mount Clare depôt, one Cochran, the draftsman of the defendants, examined the same, and took measurements thereof. This car was a single car; the draught bar ran through the body; but the body was not supported on cross bars running through it, according to one of the descriptions in the plaintiff's patent. The witness being shown the model marked A, proved the same to be a fair representation of the car so measured by Cochran. The plaintiff further proved that cars, 24 in number, represented fairly by the model marked B, were subsequently built by the defendant; the said cars in place of being in part cylindrical and in part conical, as represented in the model A, being octagonal in the upper portion, and of the form of an octagonal pyramid in the lower portion; that the said cars were supported upon an octagonal framing, forming the floor of the platform of a four-wheeled truck, which framing was

in contact with the sides of the octagonal pyramid, as represented in the model. It also appears from the said model, that the lower portion of the car built by defendant did not project lower down than to a point one or two inches above the level of the upper portion of the axles of the truck frame.

Evidence of H. R Hazlehurst.

The plaintiff further proved, by Henry R. Hazlehurst, a civil engineer, and one of the proprietors of the Vulcan Works, in the city of Baltimore, that cars upon the plaintiff's patent had been built at said works; that the iron with which such cars could be built was thinner than could be used in square or parallel sided cars; and that this was an advantage obtained by the defendants also over the square or oblong cars, though perhaps not to the same extent.

That the iron in both cars was subjected to a tensile strain, while the iron in the defendants' car was also subjected to a cross strain; that this was in proportion to the length of the straight part, and would be less, as the straight sides of a car were increased in number, as by making the car sixteen sided, thirty-two sided, and so on; that the advantage of carrying a large load was also obtained in the octagon, as well as the facility of discharging the load at the bottom. This witness on his cross examination stated that, in his opinion, the use of bars to support the car, which he had seen at the Mount Clare depôt, was disadvantageous rather than otherwise, as compared with the mode in actual use; the bars were not used in the cars built by witness.

Evidence of James Murray.

The plaintiff further proved, by James Murray, a civil engineer, and partner of the last witness in the ownership of the Vulcan Works, that the car built by the defendant would cost as much, if not more, than the car of the plaintiff; that the form of the plaintiff's car was the strongest that could be given in proportion to the weight of the iron used; that there were four advantages peculiar to the plaintiff's car, the lowering of the centre of gravity; the convenience of discharge; the lightness of the iron, and the capacity of the car in proportion to its weight; and that these advantges were obtained in the defendants' car, although not to the same extent. Witness, on being asked whether the strength of defendants' car to resist the strain on its octagonal portion or sides, was not equal to the strength of the plaintiff's car, answered, not precisely, as there was a tendency in the car to assume a circular shape, in consequence of the pressure on the flat sides of the octagon, which was resisted by the framing on which the car rested; that the framing was required to enble the car to keep its shape and sustain its load; that the wooden cars used on the Baltimore and Ohio Railroad prior to plaintiff's invention carried double their own weight of coal, which was discharged through six doors in the bottom; that the cars used on the Read-

ng railway discharged at the bottom through one opening, with two doors, but they were oblong in shape, and their bodies not unlike the model C, being a frustrum of a four-sided figure. They were made of iron thicker than that used by the plaintiff.

That the car of the defendant was not so good a car as that of the plaintiff, owing to its tendency to lose its form by pressure outward of the load, and having a strain which the plaintiff's had not.

Evidence of Stephen S. Lee.

The plaintiff further offered in evidence, by Stephen S. Lee, by education a civil engineer, and having been engaged as agent in the transportation of coal, that the iron car, like model A, is the best car known for the purpose; that the pressure of its load outward is the same in all direction; that it is stronger in proportion to the metal used in it than any other kind of car, and its shape facilitates the discharge of its load; and that the car consisting of an octagon and octagonal pyramid, like the model B, performs nearly the same functions as the conical car.

That the defendant's car was a good one, and that it would stand the pressure of the load, in the opinion of the witness, without a supporting frame; that, in the cars on the Reading railroad, which are oblong, the shelving downward of the bottom facilitates the discharge of the coal. That the plaintiff's car is easier to make than the defendant's, and is mathematically the best; but that the defendant's would maintain *in* its form without a framing, and practically answer the same purpose. A four-sided pyramid would not be mathematically the same as an octagon or a cone.

Evidence of John Elgar.

The plaintiff further proved, by John Elgar, a civil engineer, that the advantage of the plaintiff's invention is in the conical form. That this enables a large load to be carried lower down, and reduces the size of the flat service at the bottom of the car; that the pyramidal form embodies this principle; that the circle contains the most strength in proportion to the quantity of iron used, and exerts in this shape its tensile strength, which is also exerted in the octagon car, with the addition of an increased strain at the angles; that as the square was left and the circle approached, in the construction of a car, the advantages increased, and additional strength was the result; and that the circular and octagon car approximated in obtaining the greatest strength of material; that, in the opinion of witness, the framing around the octagon was not necessary to resist the pressure outwards from the load, but only to support the car and its weight; that the angles in the defendant's car aided in preventieg it from losing its form; and that the angle in the plaintiff's car, between the cone and cylinder, had the same tendency.

Evidence of J. H. Alexander.

The plaintiff, further to support the issue on his part, proved by J. H. Alexander, a civil engineer for twenty years, that the circle contains

a greater area than any other figure in proportion to its circumference, and has a greater strength than any other to resist pressure from within, in proportion to the thickness of the material; that this obtains in the conical form when used in the plaintiff's car, and which is adopted on that account, and not merely to add to the capacity of the car, which it does however, while it lessens the flat surface at the bottom of the car, and which bottom is weak in proportion to its size or area. That the principles here mentioned are the same in the octagonal car; and that, had the octagonal car been the first constructed, the car subsequently used would have operated upon the same principles. In the circle there is less tendency to change of form from the action of the load than in the octagon; though really, and speaking accurately, there is no perfect circle in mechanical construction; that the elements or principles on which the conical and octagonal cars are constructed are the same, though the conical form would have been better than the octagonal, both in principle and mechanical structure. A square car would be the most disadvantageous form that could be adopted, in view of the advantages obtained by the conical, except perhaps the oblong. In answer to a question from the court, this witness stated, that, in proportion as you deviated from the circle, you require greater strength of iron as you go towards the square, and a square would require more exterior suppor[t] than a figure of more sides. In answer to further questions on the part of the plaintiff's counsel, this witness stated, that it would take a longer line to surround a square than an octagon or circle of equal area, and of course consume more iron to make a square or oblong car than a round or octagonal one, the thickness of the iron being the same; that while, theoretically and mathematically, there would be advantage in the use of the conical-shaped car of the plaintiff, practically and substantially the same advantages would, in the opinion of witness, be obtained by the defendant's car.

Evidence of George Seppes.

The plaintiff, further to support the issue on his part, proved by George Seppes that he was the clerk of the plaintiff at the time the car spoken of by Doubleday was built, as well as thirty other cars of the same character. Ten of these were for the Allegany Mining Company, five for the Mount Savage Railroad Company, and sixteen for the Borden Mining Company. Their weight was 5,750 lbs. each, and their respective capacities 18,550, making the weight of the load, in proportion to that of the car, 33 to 1; that the thickness of the iron used in these cars [was] 3-32ds of an inch, and the dimensions of the band around the top $\frac{1}{4}$ of an inch by 2 inches. The price of ten was $300, and for the rest $320.

The plaintiff further proved by other testimony that fifteen per cent. was a fair and usual profit for work of this sort.

Evidence of E. Pratt.

The plaintiff, further to support the issue on his part, proved by

Enoch Pratt that he was the agent for the Mount Savage Railroad Company, owning road on which the Frostburg Coal Company, the Allegany Mining Company, and the Borden Mining Company, transported coal from the mines to Cumberland, the Mount Savage Railroad Company furnishing the motive power, and the mining companies the cars. That an engine was able, with the cars in use in 1849–'50, to carry 29 empty cars to the mines, and bring back 80 loaded ones. That it was a desideratum, then, to have the cars so lightened, in proportion to the weight of coal carried in them on the steep grades of these mountain roads, exceeding 100 feet to the mile, that an engine could carry up 40 cars, or one-half the load down, which would save one trip over the road. With this view the witness called on the plaintiff, whose double conical coal cars were then running on the Baltimore and Ohio railroad, to devise a model car for the use of the mining company answering the foregoing requisitions; and the result was a car, represented by model A, which, weighing about 2½ tons, carried, on one occasion, when witness was present, 9½ tons in perfect safety and satisfactorily, from Baltimore to Cumberland. This car was altered afterwards in the framing, in connexion with the axles, but without reference to the body of the car, and became the model car, after the plan of which cars of the Allegany and Borden mining companies were built, as well as the Mount Savage company. That subsequent to this the witness saw, for the first time, the octagon cars of the defendant, built by him for the Frostburg Coal Company, one of the companies using the Mount Savage railroad.

Evidence of James Milholland.

Defendant's evidence.

The defendant then, to support the issue on his part, proved by James Milholland that he was at this time the superintendent of the Reading Railroad Company, and familiar with the cars used thereon, and with the cars used in the transportation of coal generally. The car of the defendant (model B) was not in the form of a cone, mathematically; that the load in it did not press equally in all directions, the greatest pressure being in the centre of each sheet, which had a tendency to change the form of the car, making it round. That the Reading railroad car was an oblong car, (model C,) and delivered itself at the bottom, through one opening, with double doors, more readily than an octagon car. That there was now a car on the plaintiff's plan on the Reading road, which had been narrowed to suit the exigencies of that particular road.

Cross examination.

On cross examination.

That the advantage of a reduced bottom of the car was obtained, whether the car was conical or octagonal; that the strengthening of the bottom, due to the adoption of a conical form, was the same when

the octagonal form was adopted or the circular. That the circular form was the best to resist the pressure, as, for instance, in a steam boiler, and an octagonal one better than the square form; that the octagonal car was not better than the conical car; that, for practical purposes, one was as good as the other; that a polygon of many sides would be equivalent to a circle; that the octagon car, practically, was as good as the conical ones; and that, substantially, the witness saw no difference between the two.

Evidence of T. Perkins.

The defendant, further to support the issue on his part, proved by Thasher Perkins that he was formerly master machinist on the Baltimore and Ohio railroad; that the octagon car of defendant did not resist the pressure equally on all its sides; that this pressure had a tendency to bring the car into the form of a circle; and that whether it would become a circle would depend upon the thickness of the iron out of which it was made. The framing on the platform of the truck would prevent this circular tendency at that place. The iron band on the top of defendant's car would have the same effect, operating, as did the band on the plaintiff's car at top. The plaintiff's supporting bars would, in the opinion of witness, be a disadvantage in loading.

Cross examination.

On cross examination.

That the best form is the conical, and that advantages are lost in proportion as there is a departure from it, and a square hopper in practice answers the purpose of discharging the load as well as a circular one. That an octagonal car of the same thickness of iron will not be as strong as a circular one.

Evidence of S. Hays.

The defendant, further to support the issue on his part, proved by Samuel Hays, now master of machinery on the Baltimore and Ohio railroad, that in the plaintiff's car the weight of the load presses outwards equally in all parts of the car body, which is due to the conical form; but this is not so when the body is octagonal, the pressure then being the greatest on the centre of the flat surface.

Cross examination.

On cross examination.

That the advantages gained in the defendant's car are about the same in its octagonal shape as they are in the plaintiff's conical shaped car; that the circular form is the natural one; that the octagonal shape carried coal just as well as the plaintiff's car; that the coal caused the octagonal car to bulge in its flat sides; and that if a straight

edge was applied, not a side of an octagonal car would be found to be true. Practically, the use of the octangular is to bring it to a circle. The supporting bars of plaintiff's patent are not advantageous in loading, and are not used.

Evidence of J. P. Shannon.

The defendant, further to support the issue on his part, proved by Joseph P. Shannon, a practical machinist, that, in his opinion, the defendant's car was not substantially the same with the plaintiff's; that the resistance of the sides of the octagonal car is not equal, and the tendency of the load is to make them bulge out, and so change the form of the car.

Cross examination.

On cross examination.

That the octagonal car in use might practically have all the advantages of the conical one; that he said they were not substantially the same, because a circle and an octagon were not the same, and had separate properties.

Evidence of Wm. Slicer.

The defendant further proved, by William Slicer, that the plaintiff's and defendant's cars (A and B) were both alike and different: in profile the same; in plan, one a circle, the other an octagon. The plaintiff's is the best, owing its advantages to its circular form. The cars were different, because one was circular and the other octagonal, and there was no figure in the world that had the same properties as the circle; that as you left the circle you lost advantages; it was the natural form; that there was a tendency in the octagonal car to bulge, which was resisted by the framing.

Evidence of William McKeldin.

The defendant further proved, by William McKeldin, that the cars of the defendant fitted snug into the octagonal opening of the platform, that they were made of iron $\frac{8}{32}$nds of an inch in thickness, and that the top band was $\frac{1}{4}$ of an inch by $1\frac{1}{2}$ inches, that the cars were at first 8 feet 6 inches wide, reduced to 8 feet breadthwise to meet the exigencies of the mining road.

Evidence of Cochran.

The defendant further proved, by Cochran, that he was defendant's draftsman in 1849–'50, that in view of the call for cars from the mining roads near Cumberland, he was required by the defendants to get up a car that would suit their purposes, that he went to the Reading road; finding nothing there, he returned to Baltimore, and went to

the plaintiff's shops, where he saw a car (model A) being nearly finished, which he examined and measured. That it occurred to him afterwards to make a square car, but finding that to get it low enough down, the wheels would interfere with the square pyramid, he adopted the octagonal form. That the framing of the truck was a part of his plan, but that the car body required no aid from the framing to enable it to keep its shape, as it was self-sustained even when loaded. The framing was to support the load only. The cars of plaintiff and defendant are not on the same principles, because the circle has properties which no other figure has, and it is on this account that he denies the the principle to be the same. That he went to the plaintiff's shops at his own instance, and not by the direction of the defendant, and they did not know of his going to the plaintiff's shops.

Whereupon the plaintiff prayed the court to instruct the jury.

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vs.
Adam Denmead, Edward Denmead, Talbot Denmead. } Plaintiff's prayers.

Plaintiff's prayers.

The plaintiff, by his counsel, prayed the court to instruct the jury, that the object in view of the plaintiff as described in his specification was the construction of a car that would carry more, in proportion to its weight, of coal and all other heavy articles in lumps, than had been previously done, while, at the same time, the cars would have greater durability than those heretofore made; which object he declares that he accomplished by making the body of the car, or a portion thereof, conical; and that accordingly the invention secured to him by his letters patent is the making the body of the car in the form of the frustrum of a cone, substantially as described in his specification. And that what the jury have to look at, is not simply whether in form and circumstances, which may be more or less immaterial, that which has been done by the defendants varies from the specification of the plaintiff's patent, but to see whether, in substance and in effect, the defendants, having the same object in view as that set forth in the plaintiff's specification, have, since the date thereof, constructed cars, which substantially on the same principle, and in the same mode of operation, accomplish the same result.

That the principle of construction of the cars described in the plaintiff's specification is declared by him to be the making of the body or a portion thereof conical; and that to entitle him to a verdict in this case, it is not necessary; that the body of the defendant's car should be conical, in the exact definition of the term; provided the jury believe that the form adopted by the defendants accomplishes the same result substantially with that in view of the plaintiff, and upon substantially the same principle and in the same mode of operation.

And the defendants, by their counsel, prayed the court to instruct the jury as follows :

Ross Winans
vs.
Adam Denmead, Edward Denmead, Talbott Denmead. } Defendants' prayers.

Defendants' prayers.

1. By the true construction of the plaintiff's patent he claims only a combination, consisting of two parts, first, of a car body of a particular form, substantially as described by him in the specification; and, 2d, of a particular mode of connecting that car body with the truck frame. And as there is no evidence that the defendants have ever constructed car bodies connected with the truck frame in the manner claimed by the plaintiff, there has been no infringement of his patent, and the plaintiff is not entitled to recover.

2. If, however, by the true construction of the patent the plaintiff claims not only in combination, but as separate and distinct improvements, both the form of his car body and his mode of connecting it with the truck frame, then, if the jury shall believe from the evidence that the mode of connecting claimed by him is useless, his patent is void, and he is not entitled to recover.

3. By the true construction of the patent, the plaintiff claims a car body which, in the lower part thereof where it passes down within the truck frame, is in the form of the frustrum of a cone; and as there is no evidence that the defendants have ever constructed car bodies of that form, there has been no infringement of that part of his patent; and there being no proof of the infringement of any other part of it, the plaintiff is not entitled to recover.

4. If, however, the plaintiff's patent covers any thing more in regard to the form of his car body than the form there mentioned, it secures to him only such other forms as are substantially, that is to say, in mode of operation and effect, the same with the form of a frostrum of a cone as described by him; and unless, therefore, the jury shall be satisfied from the evidence that, in the car bodies constructed by the defendants, the force exerted by the weight of the load presses equally in all directions, and does not tend to change the form thereof, the plaintiff has shown no infringement, and is not entitled to recover.

5. Whatever may be the form of the car secured to the plaintiff by his patent, the downward extension of the same within the truck frame, and between the axles, is claimed by him as essential to its use; and as there is no proof that any of the cars constructed by the defendants do extend downwards between the axles, that has been no infringement, and the plaintiff is not entitled to recover; which instructions the court refused to give, but instructed the jury:

Court's instructions.

That while the patent is good for what [is] described therein, a conical body in whole or in part, supported in any of the modes indicated

for a mode of sustaining a conical body on a carriage or truck, and drawing the same, and to those principles which were due alone to conical vehicles, and not to rectilinear bodies, and it being admitted that the defendants' car was entirely rectilinear, that there was no infringement of the plaintiff's patent.

Whereupon the plaintiff, by his counsel, prayed leave *leave* to except as well to the refusal to grant the instructions prayed by him, as because of the instructions in fact given by the court, in the form so given, and that the court would sign and seal this bill of exceptions, which is accordingly done this 24th day of April, in the year eighteen hundred and fifty-two.

JOHN GLENN. [SEAL.]

And now here, at this day, to wit, the twenty-fourth day of April, in the year of our Lord one thousand eight hundred and fifty-two, the said Ross Winans produced to the circuit court here the writ of the said United States of America, for the correcting of errors of and upon the premises, commanding the record and proceedings aforesaid of the judgment aforesaid, so as aforesaid rendered, with all things concerning the same, to be transmitted to the Supreme Court of the United States, to be held at the city of Washington on the first Monday in December next, which said writ of error is in the words and of the tenor following, to wit:

THE UNITED STATES OF AMERICA, *ss:*

The President of the United States, to the judges of the circuit court of the United States, for the fourth circuit, in and for the Maryland district, greeting:

[SEAL.] Because in the record and proceedings, as also in the rendition of the judgment of a plea which is in the said court, before you, or some of you, between Ross Winans, plaintiff, and Adam Denmead, Edward Denmead, and Talbott Denmead, defendants, a manifest error hath happened, to the great damage of the said Ross Winans, as by his complaint appears. We being willing that error, if any hath been, should be duly corrected, and full and speedy justice done to the parties aforesaid in this behalf, do command you, if judgment be therein given, that then, under your seal, distinctly and openly, you send the record and proceedings aforesaid, with all things concerning the same, to the Supreme Court of the United States, together with this writ, so that you have the same at Washington on the first Monday of December next, in the said Supreme Court to be then and there held; that the record and proceedings aforesaid being inspected, the said Supreme Court may cause further to be done therein, to correct that error, what of right and according to the laws and custom of the United States should be done.

Witness the honorable R. B. Taney, chief justice of our Supreme

Court, the first Monday in December, in the year of our Lord one thousand eight hundred and fifty-one.

J. H. B. L. Issued 24th April, 1852.

THO. SPICER, *Cl'k Cir. Co.*

In pursuance whereof, and according to the form and effect of the act of Congress in such case made and provided, a transcript of the record and proceedings of the judgment aforesaid, so as aforesaid rendered, with all things concerning the same, together with the said writ of error, are hereby transmitted to the said Supreme Court accordingly.

Writ of error bond.

Know all men by these presents, that we, Ross Winans and Thomas Winans, are held and firmly bound, unto Adam Denmead, Edward Denmead, and Talbott Denmead, in the just and full sum of five hundred dollars, lawful money of the United States, to be paid to the said Adam Denmead, Edward Denmead, and Talbott Denmead, their heirs, executors, administrators, or assigns; to which payment, well and truly to be made and done, we hereby bind ourselves, our heirs, executors, and administrators, jointly and severally, firmly by these presents. Sealed with our seals, and dated this first day of June, in the year of our Lord one thousand eight hundred and fifty-two.

Whereas, at a circuit court of the United States for the fourth circuit, in and for the Maryland district, begun and held at the city of Baltimore on the first Monday in April, in the year of our Lord one thousand eight hundred and fifty-two, the said Adam Denmead, Edward Denmead, and Talbott Denmead, by the judgment of the same court recovered against the said Ross Winans their cost and charges by them about their defence in that behalf laid out and expended. And whereas the said Ross Winans hath sued out the *the* writ of the United States of America for the correcting of errors, and a citation directed to the said Adam Denmead, Edward Denmead, and Talbott Denmead, citing and admonishing them to be and appear at a Supreme Court of the United States, to be held at the city of Washington on the first Monday in December next, to show cause, if any there be, why the judgment aforesaid, so as aforesaid rendered, as in the said writ of error mentioned, should not be corrected, and why speedy justice should not be done to the parties in this behalf.

Now, the condition of the aforegoing obligation is such, that if the said Ross Winans shall well and truly prosecute with effect his said writ of error, and pay to the said Adam Denmead, Edward Denmead, and Talbott Denmead, their heirs, executors, administrators, or assigns, the costs and charges adjudged unto them by the said circuit court, and also all such costs and charges which may be awarded to them by the said Supreme Court, in case he shall fail to make good

his said plea, then the above obligation to be void and of none effect, otherwise to be and remain in full force and virtue in law.

ROSS WINANS, [SEAL.]
THOS. WINANS. [SEAL.]

Signed, sealed, and delivered, in presence of—
GEO. A. SEPPES.
Approved. R. B. TANEY.

Citation.

The United States of America, to Adam Denmead, Edward Denmead, and Talbot Denmead, greeting:

You are hereby cited and admonished to be and appear at a Supreme Court of the United States, to be held at the city of Washington on the first Monday in December next, pursuant to a writ of error filed in the clerk's office of the circuit court of the United States, for the fourth circuit, in and for the Maryland district, wherein Ross Winans is plaintiff in error, and you are defendants in error, to show cause, if any there be, why the judgment rendered against the said Ross Winans, in the said writ of error mentioned, should not be corrected, and why speedy justice should not be done to the parties in this behalf.

Given under my hand and seal, at the city of Baltimore, this seventh day of June, in the year of our Lord one thousand eight hundred and fifty-two.

R. B. TANEY. [L. S.]

I acknowledge notice of the above citation.

J. MASON CAMPBELL,
Attorney for Denmeads.

In testimony that the aforegoing is a true copy, taken from the record and proceedings of the circuit court aforesaid, I hereunto subscribe my name and affix the seal of the said circuit [court,] this seventh day of June, in the year of our Lord one thousand eight hundred and fifty-two. [SEAL.]

THOMAS SPICER,
Clerk circuit court.